

Claims

1. An apparatus for driving piezoelectric fuel injector elements divided into a plurality of injector banks, each bank containing at least one piezoelectric element (10, 20), each bank being selected for charging or discharging by a bank-selection switch (S1, S2, S3, S4, S5, S6), characterized in that a bank selection switch includes a triac with a triac drive circuit (312).

2. The apparatus as defined in claim 1, characterized in that an injector bank is shut down when the triac drive circuit (312) is not driven.

3. The apparatus as defined in claim 2 or 3, characterized in that the triac is driven by two transistors.

4. The apparatus as defined in claim 3, characterized in that one transistor is an npn transistor, and the other transistor is a pnp transistor.

5. The apparatus as defined in claim 1, characterized in that a main switch (39) low side is provided for stopping a charging or discharging current when an error occurs.

6. The apparatus as defined in claim 5, characterized in that the main switch (39) is at least one of a MOSFET and an IGBT with reverse diode.

7. A method for driving piezoelectric fuel injector elements divided into a plurality of injector banks, each bank containing at least one piezoelectric element, each bank being selected for

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EM 99/0531 & EM 99/2040

charging or discharging by a bank selection-switch, characterized by driving a triac drive circuit.

5 8. The method as defined in claim 7, characterized by shutting down an injector bank when the triac drive circuit is not driven.

9. The method as defined in claim 7 or 8, characterized in that driving a triac drive circuit includes charging and discharging the circuit.

10 10. The method as defined in claim 9, characterized in that charging the triac drive circuit includes setting a positive voltage across the triac drive circuit.